AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions, and listings, of claims in the captioned patent application:

Listing of Claims:

1-10. (Cancelled)

11. (New) A sound processing device comprising:

a filter-bank configured to divide a sound input into a multitude of spaced frequency channels, and to derive an amplitude envelope for each of said multitude of frequency channels;

a transient emphasis algorithm subsystem configured to detect a short-duration amplitude transition for each of said amplitude envelopes, and further configured to emphasize said short amplitude transitions for each of said amplitude envelopes based on relative differences in amplitude of said each amplitude envelop.

12. (New) The device of claim 11, wherein said filter bank further comprises:

a plurality of band pass filters configured to divide said sound input into said multitude of frequency channels

13. (New) The device of claim 11, wherein said filter bank further comprises;

a plurality of rectifiers and low pass filters configured to derive said amplitude envelope for each of said frequency channels.

14. (New) The device of claim 11, wherein said transient emphasis algorithm subsystem emphasizes said short-duration amplitude transitions by applying a gain factor to said short-duration amplitude transitions.

15. (New) The device of claim 14, wherein said transient emphasis algorithm subsystem further comprises:

a sliding buffer for each frequency channel configured to maintain a running history of said amplitude envelope in said channel; and

wherein said transient emphasis algorithm subsystem determines said gain factor for each said short-duration amplitude transition in each said frequency channel based on said history maintained in each said buffer.

16. (New) The device of claim 14, wherein said gain factor is related to a function of the 2nd -order derivative of the amplitude envelope in each said frequency channel.

17. (New) The device of claim 14, wherein said gain factor applied to one of said short-duration amplitude transitions ranges from about 0 to about 2 for an amplitude envelope having a short-duration amplitude transition comprising a rapid rise followed by a rapid fall.

18. (New) The device of claim 17, wherein said gain factor from about 0 to about 2 causes a gain increase in the range of about 0 up to about 14dB.

19. (New) The device of claim 14, wherein said gain factor applied to one of said short-duration amplitude transitions ranges from about 0 to about 0.5 for an amplitude envelope having a short-duration amplitude transition comprising a rapid rise followed by a relatively constant level.

20. (New) The device of claim 19, wherein said gain factor from about 0 to about .5 causes a gain increase in the range of about 0 up to about 6dB.

21. (New) The device of claim 14, wherein said gain factor applied to one of said short-duration amplitude transitions is approximately less than .1 for an amplitude envelope having a short-duration amplitude transition comprising a steady state level followed by a rapid decrease in the profile.

22. (New) The device of claim 19, wherein said gain factor approximately less than .1 causes little or no increase in gain.

23. (New) The device of claim 14, wherein said gain factor applied to one of said short-duration amplitude transitions is about 0 for an amplitude envelope having a short-duration amplitude transition comprising a steady state level or a slowly varying profile.

24. (New) The device of claim 11, wherein said amplitude envelopes exhibiting short-duration amplitude transitions having different peak levels but similar peak to valley ratios are emphasized by approximately similar amounts.

25. (New) The device of claim 15, wherein said buffer maintains a running history of approximately 60 ms.

26. (New) A cochlear implant comprising:

a microphone configured to receiving an input sound signal;

a preamplifier configured to amplify said input sound signal;

a sound processing system comprising:

a filter-bank configured to divide a sound input into a multitude of spaced frequency channels,

said filter-bank further configured to derive an amplitude envelope for each of said multitude of frequency channels;

a transient emphasis algorithm subsystem configured to detect a short-duration amplitude transition for each of said amplitude envelopes;

said transient emphasis algorithm subsystem further configured to emphasize said short amplitude transitions for each of said amplitude envelopes based on relative differences in amplitude of each said amplitude envelop; and

an implanted electrode array configured to stimulate a cochlear of an implantee based on one or more of said emphasized short-duration amplitude transisitions.

27. (New) The implant of claim 26, wherein said filter bank further comprises:

a plurality of band pass filters configured to divide said sound input into said multitude of frequency channels

28. (New) The implant of claim 26, wherein said filter bank further comprises;

a plurality of rectifiers and low pass filters configured to derive said amplitude envelope for each of said frequency channels.

29. (New) The implant of claim 26, wherein said transient emphasis algorithm subsystem emphasizes said short-duration amplitude transitions by applying a gain factor to said short-duration amplitude transitions.

30. (New) The implant of claim 29, wherein said transient emphasis algorithm subsystem further comprises:

a sliding buffer for each frequency channel configured to maintain a running history of said amplitude envelope in said channel; and

wherein said transient emphasis algorithm subsystem determines said gain factor for each said short-duration amplitude transition in each said frequency channel based on said history maintained in each said buffer.

31. (New) The implant of claim 29, wherein said gain factor is related to a function of the 2^{nd} -order derivative of the amplitude envelope in each said frequency channel.

32. (New) The implant of claim 29, wherein said gain factor applied to one of said short-duration amplitude transitions ranges from about 0 to about 2 for an amplitude envelope having a short-duration amplitude transition comprising a rapid rise followed by a rapid fall.

33. (New) The implant of claim 32, wherein said gain factor from about 0 to about 2 causes a gain increase in the range of about 0 up to about 29dB.

34. (New) The implant of claim 29, wherein said gain factor applied to one of said short-duration amplitude transitions ranges from about 0 to about 0.5 for an amplitude envelope having a short-duration amplitude transition comprising a rapid rise followed by a relatively constant level.

35. (New) The implant of claim 34, wherein said gain factor from about 0 to about .5 causes a gain increase in the range of about 0 up to about 6dB.

36. (New) The implant of claim 29, wherein said gain factor applied to one of said short-duration amplitude transitions is approximately less than .1 for an amplitude envelope having a short-duration amplitude transition comprising a steady state level followed by a rapid decrease in the profile.

37. (New) The implant of claim 34, wherein said gain factor approximately less than .1 causes little or no increase in gain.

38. (New) The implant of claim 29, wherein said gain factor applied to one of said short-duration amplitude transitions is about 0 for an amplitude envelope having a short-duration amplitude transition comprising a steady state level or a slowly varying profile.

39. (New) The implant of claim 26, wherein said amplitude envelopes exhibiting short-duration amplitude transitions having different peak levels but similar peak to valley ratios are emphasized by approximately similar amounts.

40. (New) The implant of claim 30, wherein said buffer maintains a running history of approximately 60 ms.

41. A sound processing device comprising:

means for dividing said sound into a multitude of spaced frequency channels;

means for deriving an amplitude envelope for each of said multitude of frequency channels;

means for detecting a short-duration amplitude transition for each of said amplitude envelopes;

means for emphasizing said short amplitude transitions for each of said amplitude envelopes based on relative differences in amplitude of each said amplitude envelop.

42. (New) The device of claim 41, wherein said means for dividing said sound into a plurality of frequency channels further comprises:

means for band pass filtering said sound.

43. (New) The device of claim 41, wherein means for deriving an amplitude envelope for each of said multitude of frequency channels further comprises:

means for rectifying a sound in said frequency channels; and

means for low pass filtering said sound in said frequency channels.

44. (New) The device of claim 41, wherein means for emphasizing said short-duration amplitude transitions further comprises:

means for applying a gain factor to said short-duration amplitude transitions.

45. A method of processing a sound comprising the steps of:

dividing said sound into a multitude of spaced frequency channels;

deriving an amplitude envelope for each of said multitude of frequency channels;

detecting a short-duration amplitude transition for each of said amplitude envelopes;

emphasizing said short amplitude transitions for each of said amplitude envelopes based on relative differences in amplitude of said amplitude envelops.

46. (New) The method of claim 45, wherein dividing said sound into a plurality of frequency channels further comprises:

dividing said sound with a plurality of band pass filters.

46. (New) The method of claim 45, wherein deriving an amplitude envelope for each of said multitude of frequency channels further comprises:

rectifying a sound in said frequency channels; and

low pass filtering said sound in said frequency channel with at least one low pass filter.

47. (New) The method of claim 45, wherein emphasizing said short-duration amplitude transitions further comprises:

applying a gain factor to said short amplitude transitions.